Transport Canada Transports Canada

TP 1624

Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

Canada

Ce rapport est aussi disponible en français.

REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE STRIKING OF A ROCK BY THE "MARINE COURIER" IN GRAND BRUIT HARBOUR ENTRANCE ON THE SOUTH COAST OF NEWFOUNDLAND, SEPTEMBER 2, 1986.

REPORT No. 485

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REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE STRIKING OF A ROCK BY THE "MARINE COURIER" IN GRAND BRUIT HARBOUR ENTRANCE ON THE SOUTH COAST OF NEWFOUNDLAND, SEPTEMBER 2, 1986.

Particulars of Vessel

Name	"MARINE COURIER"
Official Number	803712
Port of Registry	St. John's, Newfoundland
Flag	Canadian
Call Sign	VO 4222
Gross Tonnage	316.45
Net Tonnage	159.68
Length	36.73
Breadth	8.08
Depth	3.81
Draught (at time of accident)	F: 2.13 m A: 2.27 m
Type	Passenger ferry
Built	Aluminum construction built at Georgetown, P.E.I. in 1983
Propulsion	Three Diesel engines 4,000 b.h.p., each driving a fixed-pitch propeller
Speed	18.5 knots at 1,650 revolutions
Bow Thruster	None
Crew	Six persons including the Master
Passengers	22 persons
Classification	American Bureau of Shipping
Owner	Marine Atlantic Inc. Moncton, New Brunswick

Navigating Equipment

Radar 1	Decca
Radar 2	Decca
Sounder	Furuno
Loran C	Internav LC 204
VHF 1	FM 955
VHF 2	FM 955
SSB 1	Marconi CH 1505
SSB 2	Marconi CH 100
Gyro Compass	Sperry
Magnetic Compass	Wagner MK 4
Automatic Pilot	One

Note: All times in this report are expressed in Newfoundland Daylight Saving Time (UTC minus 2½ hours).

Background

The passenger ferry "MARINE COURIER", owned by Marine Atlantic Inc., provides an important service to the small communities on the South Coast of Newfoundland. It follows a very tight schedule, which includes twelve ports of call, thus making heavy demands on the ship's small complement that sometimes makes the voyage under adverse weather conditions. Although the ship is small it is very manoeuvrable.

During the evening of September 2, 1986, the "MARINE COURIER" with 22 passengers and six crew members on board, was heading towards the narrow passage of Grand Bruit Harbour under limited light and visibility conditions.

At about 2120, as the "MARINE COURIER" was turning to starboard with starboard helm still applied, the ship's stem struck one of the two rocks east of the harbour entrance.

Shortly after the striking the "MARINE COURIER" berthed at the CN Marine Wharf in Grand Bruit where the passengers disembarked.

Five passengers and one crew member were slightly injured as a result of this incident. The ship sustained heavy damage to the stem, which required her to be dry-docked at St. John's, Newfoundland on September 7, 1986.

Particulars of injured

Name	Suzy Thorne
Age	47 years
Injury	to the ankle
Position aboard vessel	Passenger
Name	Peggy Coleman
Age	20 years
Injury	to the left arm
Position aboard vessel	Passenger
Name	Lloyd Osmond, Jr.
Age	15 years
Injury	to the head
Position aboard vessel	Passenger
Name	Tine Caines
Age	12 years
Injury	to the shoulder and the ankle
Position aboard vessel	Passenger
Name	Sylvia White
Age	22 years
Injury	to the right arm
Position aboard vessel	Passenger
Name	Fred Hillier
Age	49 years
Injury	to the left arm
Position aboard vessel	Seaman

Narrative

On September 2, 1986, at about 0800, the passenger vessel "MARINE COURIER" left Terrenceville on the South Coast of Newfoundland on a regular voyage bound for Port aux Basques. Upon departure, the ship was under the command of an experienced master who was very familiar with the South Coast of Newfoundland.

Prior to departure, the engines, steering gear and all navigational equipment were tested and found to be in good operating condition.

The distance between Terrenceville and Port aux Basques is 259 nautical miles. The sailing time to Port aux Basques is estimated at between 16 and 17 hours, including the following 12 ports of call:

Ports of Call	Distance
Terrenceville	0
Rencontre East	24
English Harbour West	49
Harbour Breton	67
Hermitage	99
Gaultois	102
McCallum	117
François	139
Grey River	159
Ramea	176
Burgeo	187
Grand Bruit	217
La Poile	226
Port aux Basques	259

The voyage proceeded normally and without incident as far as Burgeo where the "MARINE COURIER" arrived at about 1940, and after a brief stop, departed at about 1950, bound for Grand Bruit.

Departing Burgeo, there were 22 passengers and 6 crew members on board: the master, mate, chief engineer, a seaman, a seaman-cook and a supply officer. St. John's VTS Centre was advised that the "MARINE COURIER" was departing Burgeo and that its estimated time of arrival at Grand Bruit Harbour was 2120.

At Burgeo reef the mate took over the watch so that the master could rest. The master asked to be called as the vessel approached Flat Island, which is about 4.5 miles east of Grand Bruit Harbour.

From Burgeo to Grand Bruit the weather conditions were as follows:

- winds calm;
- sea calm;
- cloudy;
- reduced visibility due to rain and mist.

The ship was in the automatic steering mode other than when approaching the ports of call, at which time the electro-hydraulic hand steering system was used.

The engines are controlled directly from the bridge and the vessel was proceeding at full cruising speed on all 3 engines. The engines were set at the following revolutions:

- port engine 1,450 revolutions;
- midships engine 1,550 revolutions;
- starboard engine 1,550 revolutions.

At those revolution settings the "MARINE COURIER"s speed is estimated to be about 17.5 knots.

When Flat Island was abeam to the north, the mate and seaman acting as lookout were in the wheel-house and, as planed, they were joined a few moments later, by the master.

After rounding Flat Island, the master took over command of the vessel. By checking the heading marker on the radar, which was situated on the port side of the steering position, the master observed that the vessel was steered 285°(G) and heading towards White Island which is the normal approach when leaving The Smoker to the north for the approach to Grand Bruit Harbour.

Visibility was estimated to be two cables with light rain and mist.

Prior to berthing at Grand Bruit, the seaman was relieved of his lookout duties at about 2100 by the seaman-cook, so that the seaman could go forward to his stand-by position.

At about 2114, it was noticed in the engine-room that the revolutions of the three engines had decreased to about 1,200. At that time, the "MARINE COURIER" was south of The Smoker. The master, who was at the steering position, changed from automatic to the hand steering mode and steered the ship himself. Less than a minute after the first reduction, the revolutions of the three engines were further decreased to about 800.

At about 2115, the seaman-cook left his lookout position and went to the gangway. This left only the master and the mate in the wheel-house.

The master, who was at the wheel, switched on the starboard searchlight so that the mate could locate the two rocks at the eastern entrance known as Eastern Rock.

The operating radar was on the quarter-mile range scale with ship's head up presentation. The master was steering by visual observation with an occasional glance at the radar.

When Eastern Rock was just forward of the starboard beam by radar, the master began a turn to starboard and had an unknown amount of starboard helm applied. He glanced at the radar screen and everything appeared to be normal so he brought the vessel round to head for the one cable wide harbour entrance.

While the "MARINE COURIER" was turning to starboard, the mate aimed the searchlight at Eastern Rock. When the rocks were located, approximately 152.4 m (500 ft) away, he immediately informed the master that the vessel was approaching too close to the shore. At the same time, the master observed one of the rocks close to the bow of the vessel. The helm was immediately brought from starboard to hard-to-port and the engines were put to full astern.

This engine manoeuvre, without a pause at the neutral position, caused the midship engine to stall.

The chief engineer, noticing the one engine stall, called the wheel-house and asked for the control lever on that engine to be placed in neutral position so that the engine could be restarted. This was done but, at the same time, the vessel struck one of the rocks quite heavily with her stem.

Upon impact, the seaman who was up forward picking up a heaving line was thrown against the bulwark. The passengers, some seated and others standing, were thrown backwards and slightly injured.

Meanwhile, the master eased the helm and headed towards the wharf to disembark the passengers as quickly as possible. After an orderly evacuation, crew members inspected the vessel's compartments and observed a leak in the forepeak with which the pumps were able to cope.

Following an inspection at Grand Bruit by a surveyor of the Canadian Coast Guard, September 4, 1986, the "MARINE COURIER" was authorized to proceed to St. John's, Newfoundland.

On September 6, 1986, the "MARINE COURIER" arrived in St. John's, Newfoundland, and the following day, on the 7th entered dry-dock for permanent repairs to the bow.

Analysis

1. The "MARINE COURIER"

The "MARINE COURIER", 316.45 tons gross and 36.73 metres in length, was built at Georgetown Shipyard, Prince Edward Island in 1983, for CN Marine Inc. It was specially designed as a passenger ship that could accommodate a maximum of 130 passengers and six crew members, to serve the communities on the South Coast of Newfoundland between the ports of Terrenceville and Port aux Basques.

Due to structural problems in the propeller supports, the vessel was out of service for long periods in 1984 and 1985 and also from January to the end of July 1986.

Following sea trials in the waters South of Newfoundland from July 31 to August 2, 1986, the "MARINE COURIER" left St. John's, Newfoundland for Port aux Basques August 16, 1986, to resume the passenger service between the ports of Terrenceville and Port aux Basques.

2. Inspection certificate

At the time of the incident, the "MARINE COURIER" had SIC 16 and SIC 17 inspection certificates issued August 8, 1986 and valid until December 31, 1986.

The SIC 17 inspection certificate was issued for voyages between St. John's and Port aux Basques as a non-passenger ship. The SIC 16 certificate was issued to the vessel as a passenger ship on regular service between Terrenceville and Port aux Basques with 130 passengers and six crew.

3. Schedule of the "MARINE COURIER"

According to the summer schedule from May 17 to September 5, 1986, departures from Port aux Basques were scheduled at 0800 Monday, Thursday and Saturday, and departures from Terrenceville at 0800 Sunday, Tuesday and Friday. Once a week on Wednesdays, there was no scheduled service between Port aux Basques and Terrenceville.

The distance between Port aux Basques and Terrenceville is 259 nautical miles and the estimated duration of the voyage under normal weather conditions, allowing for twelve ports of call, is between sixteen and seventeen hours.

4. Safe Manning Regulations

On board the "MARINE COURIER" there was no watch as such but rather a work system as follows:

- the complement of six crew members including the master, began work at 0700 and was on duty for the entire duration of the voyage which usually ended between 0030 and 0100;

- every fifteen days the crew was replaced by another crew.

It was stated that even though the normal work day was from 17½ to 18 hours, there was time to rest from time to time between the ports of call. However, whenever the vessel was in fog, the master and mate were on the bridge at all times during the voyage between Terrenceville and Port aux Basques.

Under this work system, during the fifteen-day period, the crew members had a rest period that varied from 6 to 6½ consecutive hours for each working day.

The Safe Manning Regulations stipulate as follows under the heading 'Hours of Rest':

> 4.(1) ... on every ship, other than a fishing vessel,
> (a) the complement shall be sufficient, and
> (b) a watchkeeping system or work system shall be established
>
> to ensure that the master and every other person referred to in subsection 6(1) shall have a period of rest not less than 6 consecutive hours in every calendar day he is employed on that ship.

Subsection 4(4) of the said Regulations stipulates that:

> (4) Every person referred to in subsection (1) shall have at least 16 hours of rest in the aggregate in every 2 consecutive calendar days he is employed on a ship.

Under the heading 'Responsibility of Owner and Master', it is mentioned that:

> 8. The owner and master of every ship to which these Regulations apply shall ensure

> that the requirements of these Regulations are complied with in respect of the ship.

It was stated that the "MARINE COURIER" was complying with these Regulations at the time of the accident on September 2, 1986.

The Sailing Directions for Newfoundland, Sixth Edition 1980, at page 72 under the heading 'Fog and visibility' mentions that:

> ...The Grand Banks of Newfoundland and their adjacent coasts and waters are one of the largest and most persistently foggy areas of the world.

According to the tables in the Sailing Instructions for Newfoundland, the maximum days of fog fall between May and September.

5. Atmospheric conditions

The weather at the time the "MARINE COURIER" struck the rock was cloudy and the wind and sea were calm. Visibility was estimated at two cables with light rain and mist.

6. Steering gear

The "MARINE COURIER" is equipped with Wagner electro-hydraulic steering gear. The gear can function on either automatic or hand control, and it is remote controlled from three steering positions in the wheel-house: one at the centre of the wheel-house and the other two on the port and starboard sides.

At the time of the incident, the master was at the amidships steering position and the steering gear was in the hand mode. According to the crew, this steering gear had quick response from hard-to-port to hard-to-starboard and vice versa.

7. Propulsion system

The propulsion system of the "MARINE COURIER" consists of three diesel engines, 4SA, 2,940 kW, each driving a fixed-pitch propeller. According to the registration certificate, the maximum speed is 18.5 knots at 1,650 revolutions on each of the three engines.

Because of abnormal vibrations in the propeller sup-

ports, the revolutions of the port engine were reduced to 1,450 r.p.m. and the revolutions of the other two engines were reduced to 1,550 r.p.m. As a result, the speed was reduced by one knot to 17.5 knots.

During the voyage and before the incident, the propulsion system was functioning satisfactorily.

Immediately prior to the incident and in a final effort to avoid the rock, all three engines of the "MARINE COURIER" were put to 'full astern', but the centre engine stalled. It was common knowledge to the crew that to go from ahead propulsion without pausing at the neutral position could cause the engines to stall.

8. Grand Bruit Harbour

Grand Bruit Harbour on the South Coast of Newfoundland affords excellent shelter for small craft, but the entrance into the harbour is narrow and only about one cable in width. The current is negligible and is governed mainly by flow of water from the waterfall at the far end of the bay. Normally, Grand Bruit Harbour is easy to enter, except when the wind is blowing from the south.

9. Scene of the striking

Eastern Rock at the end of the eastern end of the Grand Bruit Harbour entrance consists of two large rocks whose exact position appears on the large-scale chart for Grand Bruit Harbour (see Annex A).

On the basis of an inspection of the rock by the crew members after the incident, the "MARINE COURIER" apparently struck its stem against that rock which lies to the westward.

10. The striking

From a position south of The Smoker, the master was steering the vessel in the hand mode on a course of 280° - 285° (G) at full speed under limited visibility due to light rain and mist. At that position, the speed was reduced to 1,200 revolutions and, less than a minute later, to 800 revolutions on all three engines. In the engine-room this first manoeuvre was recorded at 2114.

When the mate advised the master that the "MARINE COURIER" was at a distance of ½ mile from land by radar, he left the radar and went to the starboard searchlight.

While the mate was trying to locate Eastern Rock through the mist with the searchlight, the master began the turn to starboard in order to head for Grand Bruit Harbour entrance. Eastern Rock was located on the starboard side at a distance estimated at 152.4 m (500 ft) by the mate. Observing that the "MARINE COURIER" was turning too quickly to starboard, the mate informed the master that the ship was heading too close to land.

At that time, the wheel was still over to starboard at an unknown rudder angle. Immediately and simultaneously, the master put the engines to full astern and moved the wheel from starboard to hard-to-port.

Unfortunately this manoeuvre was made too late, and a few moments later the stem struck the rock.

11. Speed of the "MARINE COURIER"

According to the log book for September 2, 1986, the "MARINE COURIER" covered a distance of 115 nautical miles between Gaultois and Grand Bruit Harbour in 6 hours and 35 minutes, indicating a speed of 17.47 knots.

According to the engineer, the engines were reduced to 1,200 revolutions at 2114, and at that time the mate stated that the "MARINE COURIER" was south of The Smoker. This position was about 3/4 mile from the scene where the collision took place at 2120; therefore, the "MARINE COURIER" had covered this distance at an average speed made good of 7.73 knots.

12. Navigation

At the time of the incident, the master and mate were on the navigating bridge. The master took charge of navigation while the mate tried to locate the rocks on the starboard side using a searchlight. At the time of the incident, the master was at the engine control levers, steering the vessel himself and occasionally looking at the radar screen that was set on the ½ mile range scale which was considered appropriate under the circumstances.

Because there are no navigational aids at the approaches to Grand Bruit Harbour, radar assistance is required to enter the harbour during darkness and when visibility is poor.

Since the mate was trying to locate the rocks with the aid of the searchlight, the master alone was responsible

for the navigation of the ship.

The navigational duties and responsibilities of the crew are clearly described in the Code of Nautical Procedures and Practices, Third Edition 1985, published by the Ship Safety Branch, which reads as follows:

> 6. **Navigation**
> (b) During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.

Prior to the incident, the planned course had not been marked on the chart nor had the ship's position been plotted.

13. Damage to the vessel

On September 7, 1986, in the dry-dock in St. John's, Newfoundland, the following damage was singled out:

- twisted and torn port and starboard A1 sheet plates;
- twisted and torn port and starboard B1 plating;
- badly twisted stem bar;
- twisted fashioned plate at the bottom of the stem bar; and
- twisted port and starboard chine piece.

14. Evacuation of the ship

The crew members helped to evacuate the passengers from the "MARINE COURIER" as soon as the vessel berthed at the CN Marine Wharf in Grand Bruit Harbour. Whilst some later returned on board to spend the night, others were accommodated in private homes.

15. Experience and qualifications

The master of the Canadian ship "MARINE COURIER" holds a Canadian Certificate of Competency as Master, Home Trade, issued in 1975. He began his seagoing career in 1948 with CN Marine as a seaman. He has sailed as master on board several CN Marine vessels since 1975 and

has vast experience and a good knowledge of the South Coast of Newfoundland.

The first mate on board the Canadian ship "MARINE COURIER" holds a Canadian Certificate of Competency as Master, Home Trade, issued in 1977. He began his seagoing career in 1966 with CN Marine and had held the position of first mate since 1978. He has a good knowledge of the South Coast of Newfoundland.

Findings

On September 2, 1986, at about 2120, under conditions of limited light and visibility, the passenger ship "MARINE COURIER" struck a rock at the eastern end of the Grand Bruit Harbour entrance.

It would appear that the following factors contributed to the incident:

- failure to ensure that the "MARINE COURIER" was on a safe track when heading toward the Grand Bruit Harbour entrance, acknowledged to be a narrow passage;

- too many duties were being carried out by the person in charge of navigation preventing him from closely monitoring the progress of the vessel;

- a speed not suitable for the existing circumstances and conditions when heading for a narrow passage in restricted visibility; and

- the vessel "MARINE COURIER" was steered towards the rock following inadequate helm compensation.

Other Findings

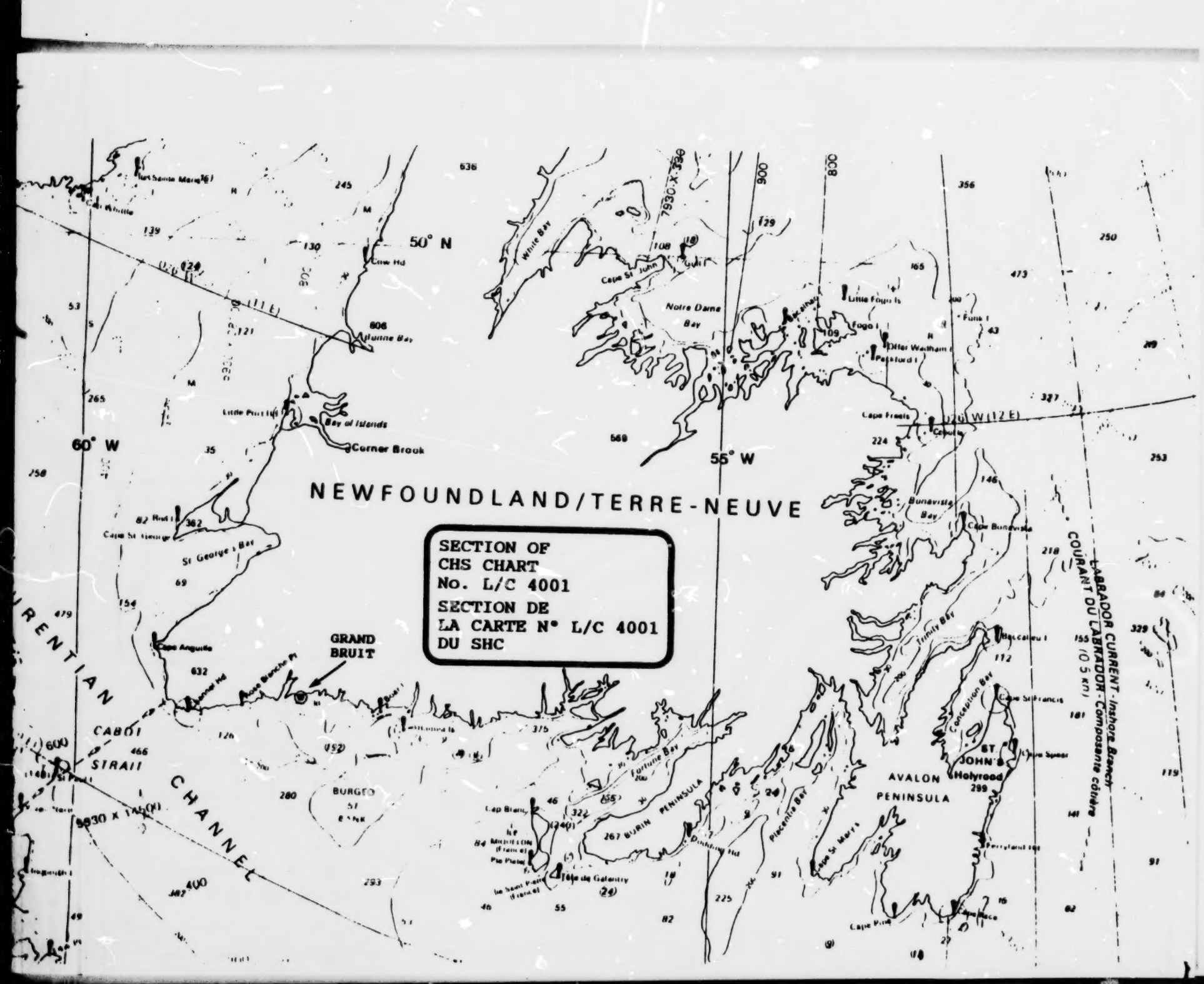
Prior to the striking, the mate was involved in trying to locate the rocks on the starboard side, with the aid of a searchlight.

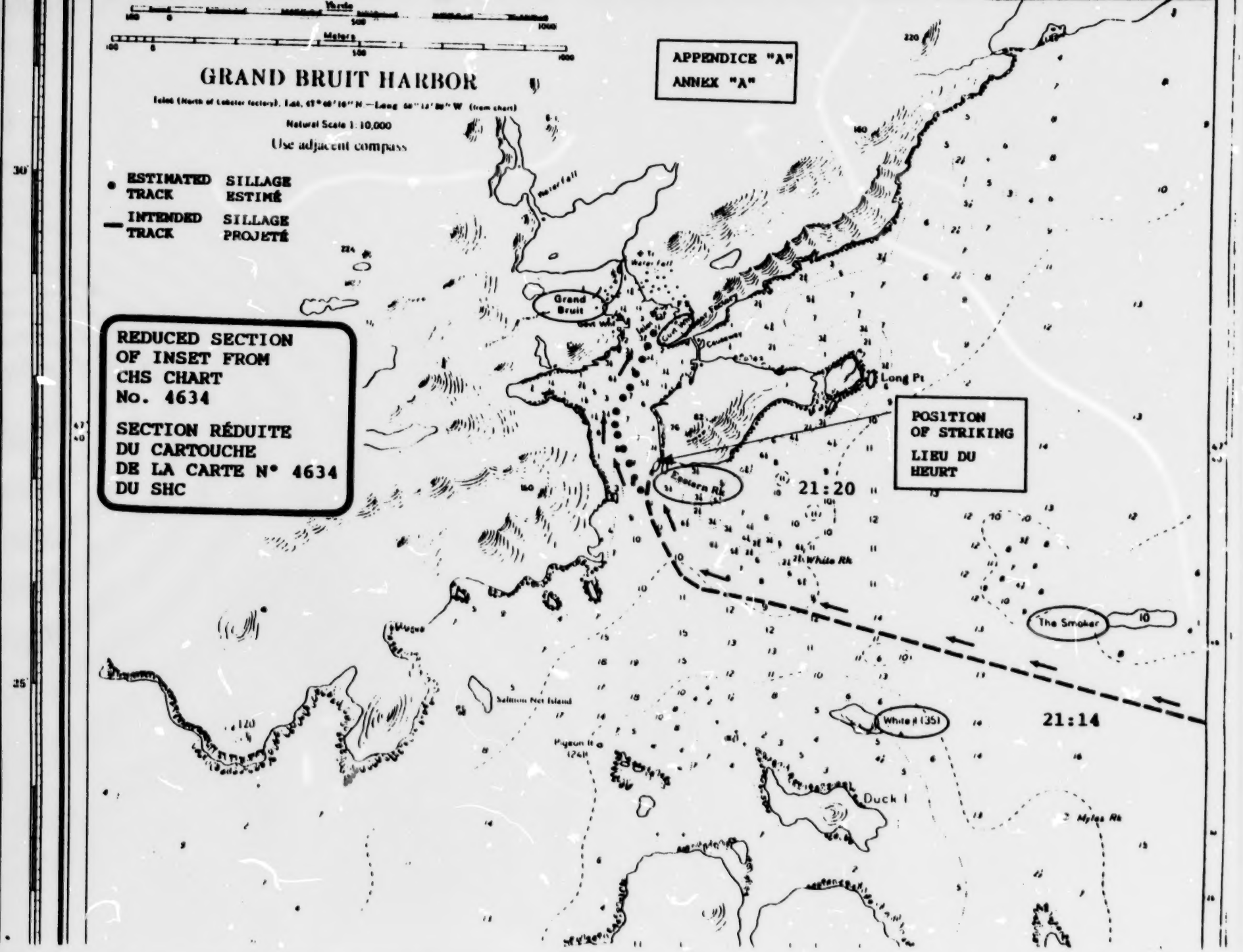
The master was navigating confidently since he was familiar with Grand Bruit Harbour entrance having made several previous approaches during his career.

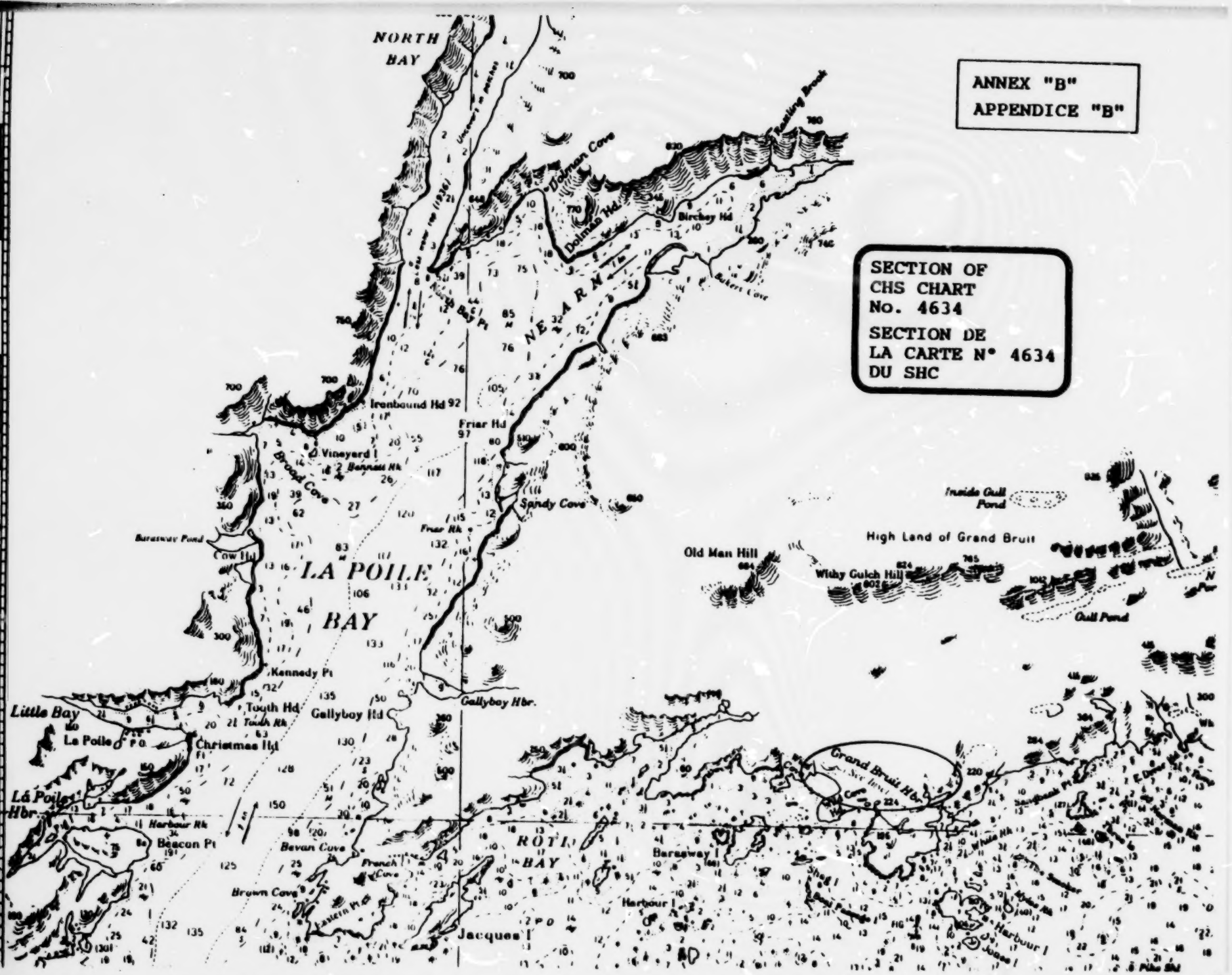
The two rocks in question are clearly indicated on the plan of large-scale Chart No. 4634 of Grand Bruit Harbour.

Although the "MARINE COURIER" was equipped with a loudspeaker system, there was no time to warn the passengers prior to impact.

OTTAWA, ONTARIO
SEPTEMBER 1987.


NEWFOUNDLAND/TERRE-NEUVE
SECTION OF CHS CHART No. L/C 4001
SECTION DE LA CARTE N° L/C 4001 DU SHC
50° N
60° W
55° W
GRAND BRUIT
CABOT STRAIT
CHANNEL
AVALON PENINSULA
BURIN PENINSULA
ST JOHN'S
Holyrood
Bay of Islands
Corner Brook
St George's Bay
Cape Anguille
Cape St George
Port aux Basques
Fortune Bay
Placentia Bay
Trinity Bay
Conception Bay
Bonavista Bay
Notre Dame Bay
White Bay
Fogo I
Cape Freels
Cape Bonavista
Cape St Francis
Cape Race
Cape Pine
Cape Ray
Cape St John
Cape Whittle
Lourdes
Burgeo
Grand Bruit
Port aux Basques
Channel-Port aux Basques
LABRADOR CURRENT - Inshore Branch
COURANT DU LABRADOR - Composante côtière
(0.5 kn)


APPENDICE "A"
ANNEX "A"
GRAND BRUIT HARBOR
Natural Scale 1:10,000
Use adjacent compass
ESTIMATED TRACK SILLAGE ESTIMÉ
INTENDED TRACK SILLAGE PROJETÉ
REDUCED SECTION OF INSET FROM CHS CHART No. 4634
SECTION RÉDUITE DU CARTOUCHE DE LA CARTE N° 4634 DU SHC
POSITION OF STRIKING
LIEU DU HEURT
21:20
21:14
Grand Bruit
Long Pt
Eastern Rk
White Rk
The Smoker
White I (35)
Duck I
Salmon Net Island
Pigeon I (246)
Miles Rk


ANNEX "B"
APPENDICE "B"
SECTION OF
CHS CHART
No. 4634
SECTION DE
LA CARTE N° 4634
DU SHC
NORTH
BAY
NEARM
Dolman Cove
Dolman Hd.
Birchay Hd
Ironbound Hd
Friar Hd
Vineyard I
Broad Cove
Sandy Cove
Burnt Pond
Cow Hd
LA POILE
BAY
Kennedy Pt
Gallyboy Hbr.
Gallyboy Hd
Tough Hd
Little Bay
La Poile P.O.
Christmas Hd
La Poile Hbr.
Harbour Rk
Beacon Pt
Bevan Cove
French Cove
Brown Cove
Eastern Pt
Jacques I
ROTI
BAY
Barasway I
Harbour I
Grand Bruit Hbr.
Inside Gull Pond
High Land of Grand Bruit
Old Man Hill
Wishy Gulch Hill
Gull Pond

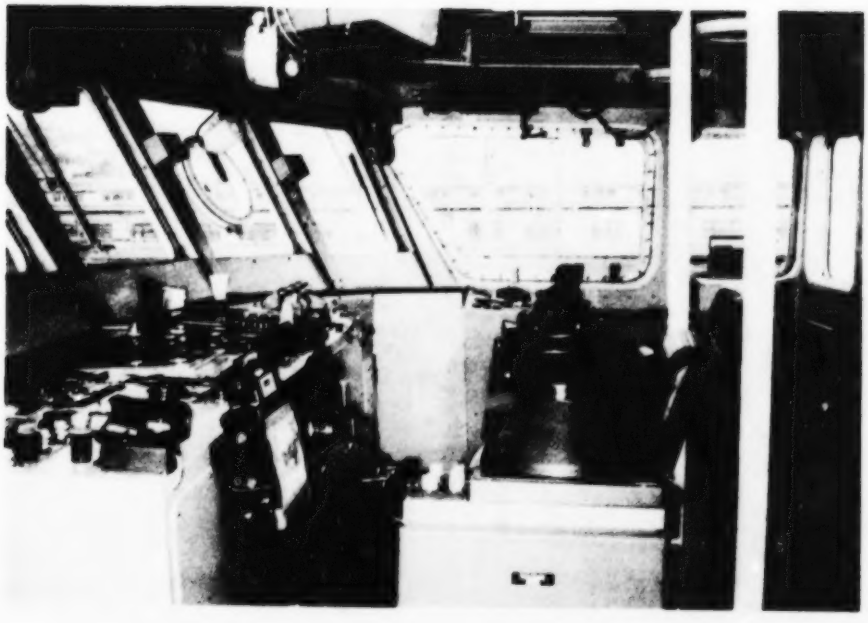
"MARINE COURIER"

Along wharf in St. John's.

À quai à Saint-Jean (T.-N.).

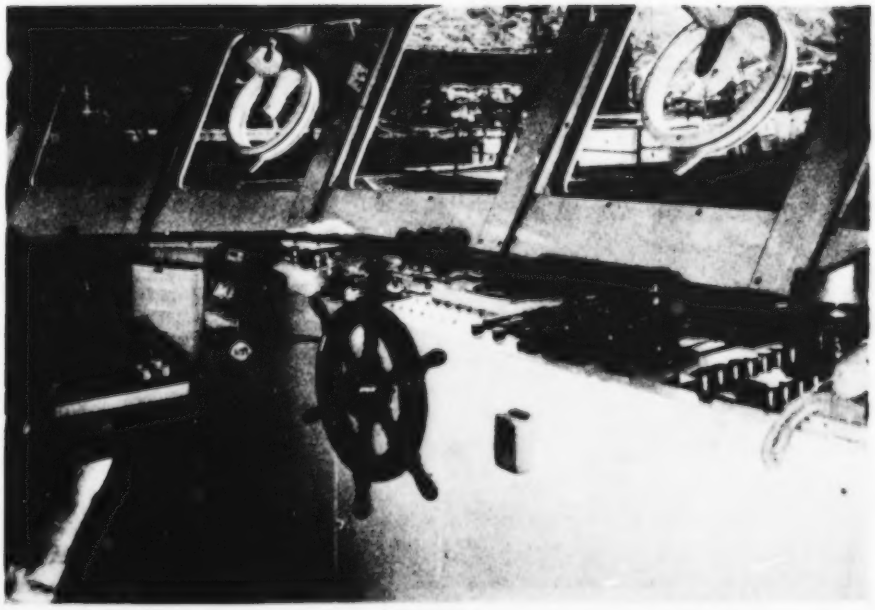
"MARINE COURIER" in dry dock in St. John's.

Le "MARINE COURIER" en cale sèche à Saint-Jean (T.-N.).



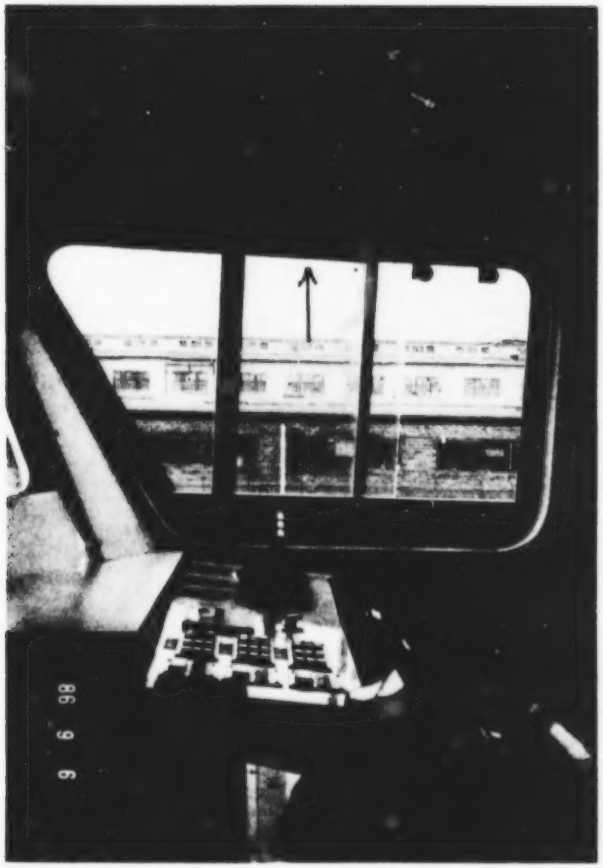
Starboard view of bridge.

Vue de la passerelle vers tribord.



View of steering station at centre of wheel-house.

Vue du poste de barre au centre de la timonerie.



View of starboard steering position with reflector controls on deckhead.

Vue du poste de barre à tribord avec contrôle du reflecteur au plafond.

Vue des supports d'hélice.

View of propeller supports.

Damage to vessel "MARINE COURIER".

Avaries au navire "MARINE COURIER".